Chapter 3—Environmental Consequences

3.1 Introduction

This chapter addresses the environmental consequences that could result from the Proposed Action (Alternative 2) and the No Action (Alternative 3). Direct, indirect and cumulative impacts for each alternative are discussed. Mitigation measures, as necessary, are included in Proposed Action alternative. Using these criteria will help the decision maker select an alternative.

3.2 Recreation

Alternative 1—No Action

Direct and Indirect Effects

In the short term this alternative will have no impact or effect on the public or on the use of the facilities. However, if any or all of the culverts fail during a flood event then roads may be inaccessible to the public until the stream crossings are repaired. This could occur within the next 15-25 years given that the existing culverts would likely be overtopped at a 15-year return interval flow or greater.

Cumulative Effects

Recreation activity on Forest Service System roads will continue. Streams will lack connectivity for threatened fish species affecting fish populations in the manner discussed in the Biological Evaluation (see Appendix B).

Alternative 2—Proposed Action,

Direct and Indirect Effects

This alternative may reduce the availability of road use to the public during replacement of the culverts. The extent of this reduction in availability will be determined by the schedule and duration of the project. During project implementation roads scheduled for culvert replacement will be closed to public access for approximately two weeks and a detour route provided where possible for the recreating public (using the existing Forest Service road system). Access to the existing trailhead on Forest Service 2010219, and 2010148 will have no effect from the culvert replacement. On Forest Service Road 4559 while this culvert is being removed, the public will not be able to access the trail during this period. Recreationists can access the east end trailhead from Forest Service road 2010219 during this period. Or there is access to the Princess Trail on Forest Service Road 4500045, which is an alternative route to this trail.

Cumulative Effects

Recreation activity on Forest Service System roads will continue— recreationists may travel to alternate trailheads during project implementation.

3.3 Terrestrial Wildlife Resource Effects

Alternative 1—No Action

The effects of past and ongoing activities are considered a part of the existing condition.

Threatened and Endangered Species:

This alternative will have **no effect** on Northern bald eagles, gray wolves or Canada lynx. No habitat or individuals will be affected by implementation of this alternative.

R6 Sensitive Species

This alternative will have no impact on sensitive species listed in the Regional sensitive species list. Existing conditions are not currently affecting habitat or individuals.

This alternative will have no impact on Management Indicator Species, featured species and Neotropical Landbirds as the species either do not occupy the area or there is no habitat on the roadbeds or within the stream crossings.

Alternative 2—Proposed Action

The effects of past and ongoing activities are considered a part of the existing condition.

Threatened and Endangered Species:

Bald Eagle

Bald Eagles are considered transitory in the project area. No suitable habitat exists for bald eagles at the culvert sites or immediately adjacent areas, therefore this project will have no effect on bald eagles.

Gray Wolf

The proposed action will have no effect on gray wolves because no populations currently occupy the Malheur National Forest, no denning or rendezvous sites are known on the Forest and prey availability is not limited. Due to the location of the specific project sites this alternative will not alter any potential gray wolf habitat.

Lynx

The project area lies within the Indian Rock Lynx Analysis Unit. Four culvert sites fall within lynx habitat. The actual locations of the culverts (in road beds and streams) do not provide foraging or denning habitat, timing of the project will not disturb denning lynx, and therefore this project will have no effect on Canada lynx.

R6 Sensitive Species

Habitat exists for the California wolverine and the Columbia spotted frog within the project area. Specific locations of the culverts are not considered wolverine habitat as this species tends to avoid human presence and altered areas. Culvert replacement will not alter connectivity corridors or potential habitat for the wolverine. Spotted frogs may be present along stream banks or tadpoles may be within pools adjacent to the culverts. Pools will be surveyed prior to culvert removal to determine presence of spotted frogs. If individuals are present activities will cause them to abandon the site for an estimated 3 or 4 days per site. Due to the limited duration and intensity of the project there is no impact to California wolverine or spotted frogs and their habitat.

Little or no suitable habitat exists for the pygmy rabbit, Pacific fisher, American peregrine falcon, Western sage grouse, gray flycatcher, bobolink, upland sandpiper, tri-colored blackbird or bufflehead therefore this project will have no impact on these species.

Management Indicator Species

Wildlife Management Indicator Species for the Malheur National Forest include the Rocky Mountain elk, pileated woodpecker, marten, three-toed woodpecker, Lewis' woodpecker, yellow-bellied sapsucker, red-breasted sapsucker, Williamson's sapsucker, downy woodpecker, hairy woodpecker, white-headed woodpecker, black-backed woodpecker, and northern flicker. These species will not be affected by this project because no habitat exists at the culvert sites and no snags will be felled adjacent to the sites for culvert replacement.

Featured Species

Featured species on the Malheur National Forest include blue grouse, sage grouse, pronghorn, upland sandpipers, osprey and big horn sheep. These species will not be affected by this alternative because habitat is not available nor do individuals reside at the culvert sites.

Neotropical Migratory Birds

This alternative is consistent with the Northern Rocky Mountains Bird Conservation Plan. Effects to migratory birds are expected to be minimal, as activities will be conducted outside of the breeding and brood rearing season. Habitat will not be affected as the actual locations of the culverts, in roadbeds and streams, is not considered habitat for migratory birds.

Cumulative effects

Cumulative effects will be the same for all the species listed above. A list of all reasonably foreseeable future actions is included as an appendix to this EA. Because there has been no analysis for those actions it is difficult to determine effects. However design criteria and mitigation measures will assure protection of potential habitat or species.

3.4 Aquatic Resource Effects

Alternative 1—No Action

Direct and Indirect Effects

There will be a continued risk of failure at project stream crossings during high flow events due to improper size, placement or current condition of existing culverts (ICBEMP). The sudden failure of any of these culverts would result in the release of several tons of sediment into project area streams, affecting water quality and stream channels downstream. This could reduce fish habitat quality and quantity by filling pools and covering gravel and thereby reduce fish populations within the subwatershed.

Existing Culverts in the project area that do not pass all life stages of fish at all flows would continue to hamper habitat connectivity (ICBEMP) see Table 4, page 24. Fish would not be able to move between winter rearing, summer rearing, and spawning habitat. While important to all fish species, this is even more vital to bull trout populations due to the small number of streams containing them in the Galena Watershed. Genetic viability of this species and others would remain reduced in the affected portions of subwatersheds.

Cumulative Effects

As a result of historic activities, both on Forest Service System and private lands in the area, several watershed conditions have been modified. Harvest, road management, grazing, and other management activities have all affected streams on Forest Service System lands. Activities which occur and are expected to occur on private land include: grazing, water withdrawals under State water rights, timber harvest, scattered rural housing and ranches, and use of State, County and private roads. Grazing is expected to continue on private land. Pastures include riparian areas. Most water rights are for irrigation of these pastures. Timber harvest is expected to continue to occur on private lands within the watershed. Commercially valuable timber has been harvested recently, and additional harvest would be expected. Residential buildings are limited to rural houses and ranches located outside the Forest boundary. Typical activities include ranching. Road use on State, county and private roads is expected to continue. Additional road construction is not expected. Additional roadwork would be addressed when these projects are proposed. The recent U.S. Highway 26 reconstruction project is now part of the baseline. No other large construction projects are planned in the area. Activities on non-Forest Service System lands are expected to continue to affect streams (i.e., by contributing sediment, by affecting flows, etc.) in a similar manner and magnitude as past activities.

Foreseeable actions on Forest Service land include: Blue Roads, Blue Vegetation, Blue Large Wood Placement, Blue Riparian Hardwood Planting, Blue Aspen Enhancement, and Crawford Vegetation Management. Overall, the outcome of the No Action Alternative in conjunction with these projects is improvement of fish habitat and fish populations in the project area and downstream in the Middle Fork John Day River.

Table 4 A comparison of Culverts Effects

	Alt1	Alt2
Number of Culverts remaining as fish barriers	8	0
Number of Culverts not passing 100 year floods	11	0
Number of miles stream reconnected for fish passage	0	3

Alternative 2—Proposed Action

Direct and Indirect Effects

Effects to aquatic threatened or sensitive species resulting from each of the culvert replacements include reduced feeding efficiency during times of increased turbidity and the possibility of individual mortality during construction. Trout rely largely on eye sight to feed because of this feeding success could be hampered during those times turbidity is increased.

This would be a short-term effect in a limited area since turbid conditions would dissipate soon after an instream work phase was completed, generally within a few hours; Project Design Criteria (PDCs) and mitigation measures are designed to limit the area impacted. The worst turbidity would likely occur during removal of the existing culverts and stream rerouting procedures.

Based on previous experience with in-channel restoration projects there is a chance fish could be killed or injured during construction. Any time there is digging or equipment traffic in the live stream channel fish could be killed or seriously wounded by being crushed, run over by equipment, etc. The small area of instream project work will minimize this potential. Most fish vacate the area during in-channel construction projects so the chances for large numbers of fish to be killed are low.

A positive effect from the culvert replacements is improved fish passage (for all life stages) at flows where habitat connectivity is currently hampered. This will allow all fish to move between summer/winter rearing and spawning habitats. This will also reestablish the connectivity of fish populations above and below the culverts throughout the year. A fully "connected" population increases the gene flow and variability of individual genotypes thus improving population viability. Ultimately, this leads to a healthier fish population that is better able to withstand disturbance and recover from that disturbance.

In addition, all road stream crossings will pass higher flood flows which would reduce chronic erosion/sedimentation during flood events (from water running over or around culverts or coming out of culverts with high velocities and eroding stream-banks), reduce potential for road failure, and aid in restoring natural sediment and wood routing processes) see Table 4, page 24. These factors will benefit aquatic species and habitat at each site and downstream. Another positive indirect effect is maintaining, and over time improving, aquatic and riparian habitat downstream from the culverts due to more natural water, wood and sediment routing and a reduced chance of culvert failure with subsequent habitat degradation.

Negative effects are possible from increased amounts of fine sediment degrading aquatic habitat. Fine sediment sources include material mobilized from the stream channel during construction or erosion of exposed soil during and after implementation. In either case, if enough sediment covers stream substrate in riffle areas there could be a decrease in the quality and quantity of spawning and rearing habitat and/or aquatic insect numbers. Large amounts of sediment can also fill pools, also reducing the quality and quantity of rearing habitat. The amount of sediment generated from these projects is expected to be low due to the time of implementation of PDCs and mitigation measures. Once exposed soils areas become stabilized, generally within one year, possibly less depending on precipitation, etc., then erosion would be negligible. Affected areas would be localized and probably extend no further than several hundred feet downstream from the stream crossing. The effects would be relatively short term; as flows in the spring increase this sediment would be redistributed downstream and in effect "diluted" as material settles in different areas.

There are no interdependent effects as a result of these actions. Traffic patterns and use are not expected to change and the new crossing will not facilitate new uses. Interrelated actions include erosion control methods during and immediately following construction, stream routing away from foundations, etc. Effects of these actions are discussed above.

Steelhead, bull trout and redband trout would benefit from improved connectivity of stream habitat and fish spawning and rearing habitat for the above species. As well, Chinook salmon would conditions would be improved by reducing sediment loading from roads at stream crossings. These effects over time would increase populations and improve genetic viability of the species.

Cumulative Effects

As a result of historic activities, both on Forest Service System and private lands in the area, several watershed conditions have been modified. Harvest, road management, grazing, and other management activities have all affected streams on Forest Service System lands. Activities which occur and are expected to occur on private land include: grazing, water withdrawals under State water rights, timber harvest, scattered rural housing and ranches, and use of State, County and private roads. Grazing is expected to continue on private land. Pastures include riparian areas. Most water rights are for irrigation of these pastures. Timber harvest is expected to continue to occur on private lands within the watershed. Commercially valuable timber has been harvested recently, and additional harvest would be expected. Residential buildings are limited to rural houses and ranches located outside the Forest boundary. Typical activities include ranching. Road use on State, county and private roads is expected to continue. Additional road construction is

not expected. Additional roadwork would be addressed when these projects are proposed. The recent U.S. Highway 26 reconstruction project is now part of the baseline. No other large construction projects are planned in the area. Activities on non-Forest Service System lands are expected to continue to affect streams (i.e., by contributing sediment, by affecting flows, etc.) in a similar manner and magnitude as past activities.

Foreseeable actions on Forest Service system lands include: Blue Roads, Blue Vegetation, Blue Large Wood Placement, Blue Riparian Hardwood Planting, Blue Aspen Enhancement, and Crawford Vegetation Management. Overall, the outcome of the Blue Culvert project in conjunction with these projects is improvement of fish habitat and fish populations in the project area and downstream in the Middle Fork John Day River. There is an improvement with Alternative 2 when compared to the No Action Alternative.

LRMP Standards and Guidelines

Standards and guidelines listed in the LRMP that pertain directly to the fisheries aspects of this project include

- LRMP, MA3B Standard 42 -- "Design and maintain roads to protect fisheries values and riparian area habitat."
- LRMP, MA3B Standard 45 -- "Apply erosion seeding on... all disturbed soil that occurs within 100-200 feet of... stream or where eroded material could reach a stream..." Note: Straw mulching will be used as a ground cover and some short-term grass seeding applied. Follow up seeding or transplanting of native grasses and shrubs is planned within one year.
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Alternative 1 Conflict Determination/Determination of Impact

Mid-Columbia Steelhead trout:

May affect, likely to adversely affect. Determination is due to existing passage barriers that reduce or eliminate connectivity between steelhead populations above and below the culverts as well as chronic sediment/erosion and road failure risk.

Bull Trout:

May affect, likely to adversely affect. Determination is due to existing passage barriers that reduce or eliminate connectivity between populations above and below the culverts as well as chronic sediment/erosion and road failure risk.

Chinook Salmon:

May impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or loss of viability to the population or species. Rationale is because Chinook salmon occur downstream of project sites and would be impacted by sediment to be carried to occupied habitat from chronic sediment problems or road failures.

Redband trout:

May impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or loss of viability to the population or species. Rationale is the same as for steelhead.

Alternative 2 Conflict Determination/Determination of Impact

Although the culvert replacements have the potential to increase the amount of fine sediment in project area streams, primarily short-term, the measurable effects would be negligible at the 6th field or greater watershed scale. The probability of take of threatened species resulting from replacing the culverts is low, but present regardless, as is the short-term destruction/adverse modification of critical habitat at the site-specific scale. There would be no irreversible or irretrievable commitment of aquatic resources resulting from this project.

Mid-Columbia Steelhead trout:

May affect, likely to adversely affect. Determination is due primarily to machinery working in the stream channel where fish are present, thereby increasing the chance a juvenile steelhead could be killed or injured, as well as short term impacts associated with turbidity and fine sediment. *The long-term affect of this project is beneficial.*

Bull Trout:

May affect, likely to adversely affect. Determination is due primarily to machinery working in the stream channel where fish are present, thereby increasing the chance a juvenile steelhead could be killed or injured, as well as short term impacts associated with turbidity and fine sediment. *The long-term affect of this project is beneficial.*

Chinook Salmon:

May impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or loss of viability to the population or species. Rationale is because Chinook salmon occur downstream of project sites and would not likely be impacted by short term impacts. *The long-term affect of this project is beneficial.* By reducing potential for sediment to be carried to occupied habitat from chronic sediment or road failures.

Redband trout:

May impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or loss of viability to the population or species. Rationale is the same as for steelhead and Bull trout. *The long-term affect of this project is beneficial.*

3.5 Soil and Water and Resource Effects

Alternative 1— No Action

Under the existing condition most culverts are designed to pass less than the 100-year flood, and overtopping and erosion are a strong possibility. Historically, culverts were designed to pass the 50-year flood or less, which is not consistent with PACFISH, which requires new culvert installations to pass the 100-year flood event. In the event of a 100-year flood, roads would be overtopped with floodwater. The direct and indirect effects are that road fill and surface may erode and result in large amounts of sediment being deposited into the stream. Streams are not listed on the State of Oregon Section 303(d) List of Water Quality Impaired Waterbodies (303(d) list) for sediment, however, sediment is a factor that affects beneficial uses of aquatic resources and reducing potential sediment is consistent with State of Oregon Clean Water laws. All of the streams being affected by this project are on the State of Oregon designated 303(d) list for elevated water temperature. It is unlikely that culverts now are contributing to increased water temperatures because water is shaded within the culvert itself. The cumulative effect of the existing culverts not being designed to pass the 100-year flood is that streams would have increased stream sediment and habitat would be reduced after large flood events. Water temperature is unlikely to be affected overall in the watershed as a result of the existing culvert installations because of the short distance associated with culvert installations. For example, if a culvert washes out, such a short distance would be affected shade changes would not have a measurable effect on water temperature.

Alternative 2— Proposed Action

Under the proposed action each design would pass the 100-year event (consistent with PACFISH).This alternative is consistent with PACFISH and consistent with LRMP Standards and Guidelines. The direct and indirect effects of the project would be that roads would not be overtopped in floods up to the 100-year event size. This will eliminate the erosion that may occur when roads are overtopped by large flood events. Mitigations are included in Chapter 2, which address sediment from the project. During the construction phase of the project, a very minor amount of sediment, less than a half of a cubic yard, may be introduced into the stream. This would be associated with removing the culverts and properly placing and bedding the new culverts and fords. Best management practices (see 2.3.2.4.3—Best Management Practices, page 19) are included which address these concerns and would keep sediment to a very minimum quantity and duration. This sediment would be flushed out with the next high flow. In the long term, the project will reduce sediment quantities in the stream far exceeding any short-term introduction of sediment, which may occur during construction. Potential long-term decreases in sediment occur because culvert overtopping will be reduced when culverts are designed to pass the 100-year flood event. These projects fulfill important elements of subwatershed restoration of the stream systems of Granite Boulder, Vinegar, and Vincent Subwatersheds. A hydrologic restoration was recommended in the Galena Watershed Analysis—Supplement 2002 for these subwatersheds. Removing barriers to fish passage establishes a trend toward restoration by implementing this alternative.

The cumulative effects of the project on a subwatershed basis is beneficial because stream substrates would be improved over the long term by reducing the risk of culvert failure associated with flood events. This furthers a trend toward restoration in these subwatersheds.

BMPs identify that machines will be operated on the road prism (see 2.3.2.4.3—Best Management Practices, page19). In addition, projects are being designed minimize impacts to riparian areas and are being designed with hardwood plantings in riparian areas. Hardwoods would provide shade and reduce solar heating in areas were they are planted after reaching maturity. The result, though not measurable, would be decreased stream temperature and improved water quality in those areas where shade is presently lacking. All of the streams in the project area that are listed on the State of Oregon 303(d) list, are listed for temperature concerns (see Federal Clean Water Act, page 5). The improved shade would not provide enough improvement to remove the streams from the listing; however, it would incrementally provide improved water quality and help move the stream towards delisting.

3.6 Noxious Weed Effects

Alternative 1— No Action

This analysis considered the competing and unwanted vegetation concerns related to the Blue Culverts: culvert replacement, culvert overflow dips and rocked fords. Potential strategies considered for this analysis based on evaluation of needs for vegetation management are as follows:

Direct, Indirect and Cumulative Effects: Weeds that may affect the area are described in Appendix B Vegetation Management Strategy, Blue Culverts. No action means that no activity interfering with natural processes will be undertaken. It is the appropriate strategy anytime you have no evidence to support a prediction that competing or unwanted vegetation will exceed the damage threshold of a site.

Existing conditions in terms of noxious weed locations would remain. The potential for recreation and other forest users to transport weeds or weed seeds into the project area remains. This is due to hikers, hunters, & campers and Forest Service as well as contractor project vehicles from other foreseeable projects. Weeds that may affect the area are described in Appendix B Vegetation Management Strategy, Blue Culverts.

Alternative 2— Proposed Action

Direct, Indirect and Cumulative Effects:

Because it is expected that disturbed soil in and around the project area may be susceptible to invasion by noxious weeds this strategy is inappropriate. Activities would provide the “disturbed” or bare ground, a common location for establishment of noxious weeds. For these reasons the favored no action alternative may not be appropriate.

Hikers, hunters, and campers and Forest Service as well as contractor project vehicles will be in the immediate area and all are potential vectors for noxious weeds. It is possible is that some weed species might migrate in with the contractors heavy equipment. It is also possible that weeds may come from other sources mentioned including sites adjacent to the project area and then reproduce on disturbed ground. Efforts to identify and eradicate noxious weeds before project work begins, during project work, and upon project completion are described in the Proposed Action, Section 2.3.2.4.6—Mitigation for Noxious Weeds, page20. Weeds that may affect the area are described in Appendix B Vegetation Management Strategy, Blue Culverts. Adhering to mitigation measures and project design criteria will result in there being no direct, indirect, or cumulative effects from noxious weeds because of project implementation.

3.7 Sensitive Plant Effects

Alternative 1—No Action

Direct, Indirect and Cumulative Effects:

Existing conditions of known Sensitive Plant locations and potential habitat would remain as they presently exist. However a potential would continue to exist for high flow events to release large amounts of sediment, potentially effecting sensitive species habitat. Overall the effects of the No Action Alternative in conjunction with the Foreseeable

Actions (Appendix C) would be an improvement of sensitive species habitat within the project area and downstream.

Alternative 2—Proposed Action

Direct and Indirect Effects

Habitat for sensitive plants as related to this project are discussed indirectly above under the headings of Aquatic Resource Effects, Soil and Water Resource Effects and PACFISH consistency. These discussions of the proposed activity describe why the project would benefit more natural stream flows, sediment movement and reduce the risk of sudden stream crossing failure and large-scale sediment inputs during extreme flood events and result in a more natural pattern of floodplain inundation than under current conditions immediately upstream of each stream crossing. Each of these benefits would improve the potential habitat for native plant species, some of which are listed as sensitive.

Future Reasonably Foreseeable Projects in the vicinity of Blue Culverts which may have a positive cumulative effect on sensitive species include (Appendix C): Blue Vegetation Management, Large Wood Placement, Riparian Hardwood Planting and Blue Aspen Restoration. Some of these projects would reduce stocking of stands and move them toward more historic stocking levels and likely improve habitat for native species (some sensitive) needing these habitats. Some projects would improve habitat by promoting re-growth or by planting of riparian hardwood trees and shrubs. This planting would be expected to maintain or improve related habitats for sensitive species.

The ground disturbance associated with the culvert/overflow dip and rock ford installations would provide an opportunity for noxious weeds to become established on bare soil. To minimize this possibility, noxious weed surveys will be conducted for two years following ground disturbance to detect noxious weed presence and to remove these plants by hand should they appear. Seeding and or mulching & seeding of disturbed ground with local native species should at once both reduce the potential for noxious weed invasion and their potential to spread to sensitive plant habitats.

Cumulative Effects

Historic activities of harvest, road management, grazing has possibly had an affect on sensitive native plants on National Forest. Similar activities on private land are similar and also include additional activities associated with water withdrawals, scattered rural housing and ranches, and use of State, County and private roads have also had an affect on sensitive native plant habitat. These activities are expected to continue on private lands in a similar manner and magnitude as past activities.

Based on the activities planned to be undertaken in the Blue Culverts E.A., and the Ongoing and Reasonably Foreseeable Activities for this area (as described in the Blue Culverts E.A. Appendix C), and because of the design criteria and mitigation contained in the Forest Plan, this action would not contribute to cumulative negative effects. Implementation of the described Ongoing and Reasonably Foreseeable Projects would be expected to either *not effect* or to be a cumulative *positive effect on sensitive species*.

Alternative 1 Determination of Impact to Sensitive Plants

Moonwort species (Botrychium crenulatum, B. minganense, B. pinnatum): No Impact. Rationale, No Action would result in no change in existing known populations or habitat. The potential does exist for habitat to be affected by high water flows under existing culvert conditions.

Clustered Lady's Slipper (*Cypripedium fasciculatum*): No Impact. Rationale is the same as for Moonwort species.

Least phacelia (Phacelia minutissima): No Impact. Rationale is the same as for Moonwort species.

Inland sedge (Carex interior): No Impact. Rationale is the same as for Moonwort species.

Northern Twayblade (*Listera borealis*): No Impact. Rationale is the same as for Moonwort species.

Alternative 2 Determination of Impact to Sensitive Plants

Moonwort species (Botrychium crenulatum, B. minganense, B. pinnatum): No Impact. Rationale, this sensitive species and habitat were not found in or immediately adjacent to the culvert, dip or rock ford locations.

Clustered Lady's Slipper (*Cypripedium fasciculatum*): No Impact. Rationale is the same as for Moonwort species.

Least phacelia (Phacelia minutissima): No Impact. Rationale is the same as for Moonwort species.

Inland sedge (Carex interior): No Impact/ MIIH-May Impact Individuals or Habitat, but Will Not Likely Contribute to a Trend Towards Federal Listing or Cause a Loss of Viability to the Population or Species. Rationale is the area disturbed by culvert installation could effect habitat in the short term, but these areas have been found to contain no know populations. Long term the project may prevent high flow events from disturbing potential habitat and may also return water flows for more natural floodplain scemes above culverts.

Northern Twayblade (*Listera borealis*): No Impact. Rationale is the same as for Moonwort species.

3.8 Cumulative Effects

Alternative 1— No Action

Past and present cumulative effects are as described above. Cumulative effects for actions in the foreseeable future are also similar to the above except that because the culverts would not be replaced the increased chance for more frequent overtopping and erosion would remain in culverts that are in need of armored drain dips(Project points, 4, 9,and 10). Culverts that are fish barriers are will continue contribute to the depletion of the population threatened fish species (steelhead and bull trout) in the watershed.

Alternative 2— Proposed Action

Past activities and/or management that have affected the project area and downstream reaches includes timber harvest nd road building upstream. Past harvest has likely resulted in an increase in the timing and magnitude of peak stream flows in Vincent, Vinegar, and Granite Boulder Creeks because harvest areas (particularly clear cuts) do not absorb and store water as readily as forested areas. This increase in peak flows means that it would take less of a flood event to meet or exceed the culverts flow capacity, hence overtopping may have occurred more than if timber harvest had not occurred. Roads also contribute to this because they effectively increase the drainage network, thereby increasing the amount of water entering the stream, as opposed to infiltrating the ground, during storm events. More frequent overtopping would be accompanied by erosion around the culverts themselves that would increase the amount of fine sediment entering Vincent, Vinegar, and Granite Boulder Creeks—degrading aquatic habitat downstream.

At present there are no cumulative effects from activities in the area other than the continuation of the above. The recovery and growth of timber will take decades in many areas.

In the foreseeable future, cumulative effects from future timber harvest coupled with lingering effects from past harvest activities could increase the time it takes for the watershed to recover in a hydrologic sense. However, based on recent timber harvest activities elsewhere on the Blue Mountain Ranger District it is unlikely that there will be many miles of new road constructed and the timber harvest itself would be designed to minimize the effects to hydrologic processes in Vincent, Vinegar, and Granite Boulder Creeks. Foreseeable projects such as large woody debris and aspen enhancement could improve streams and habitat. The new, larger culverts will result in less site specific and downstream effects from peak flows because they will pass water, debris, and sediment more efficiently and naturally. Over time any harvested tree stands will grow enough to improve the hydrologic function of the upper watershed.

3.8 Other Disclosures

3.8.1 Employment and Consumers

Short-term increases in local employment may occur during the implementation of these projects. This is primarily in the forest worker sector, such as equipment operator and general laborer.

3.8.2 Civil Rights, Women and Minority Groups

No effects with either alternative.

3.8.3 Wetlands and Floodplains

The No Action Alternative will not improve wetlands or flood plains. The Proposed Action, Alternative 2, will improve wetlands and flood plains over the long term because stream and riparian function would be improved in Vincent, Vinegar, and Granite Boulder Creeks.

3.8.4 Compliance with the Farmland Protection Policy Act

The Farmland Protection Policy Act does not apply to National Forest System Land.

3.8.5 Air Quality

No significant effects anticipated with any alternative.

3.8.6 Irreversible and Irretrievable Commitment of Resources

Irreversible commitment of resources refers to non-renewable resources, such as cultural resources, or to those factors that are renewable only over long time spans such as soil productivity. Irretrievable commitment applies to losses of production, harvest or use of renewable natural resources. No significant irreversible or irretrievable commitment of resources has been identified with the implementation of either alternative.

3.8.7 Environmental Justice

Federal agencies are directed to focus attention on the human health and environmental effects to ethnic minorities (American Indians, Hispanics, African Americans, and Asian and Pacific Islander Americans), disabled people, and low-income groups. The proposed action (Alternative 2) would not have disproportionately high effects to these populations, nor would there be adverse environmental effects on minority populations, low-income populations, or Indian tribes. None of these groups would be affected by this proposed action in any manner. The project are is located 30 air miles from John Day, Oregon no access would be limited during the implementation of this project.

Chapter 4—Consultation With Others

4.1 Introduction

This chapter discusses the results of consultation with other agencies. It also identifies the agencies, organizations, and interested publics contacted as part of the scoping effort associated with this project.

4.2 Consultation with US Fish & Wildlife Service (USFWS)

Federal agencies that fund, authorize or carry out actions that "May Affect" listed species must consult with the USFWS under section 7 of the Endangered Species Act. Federal actions that are non discretionary or have "No Effect" on listed species are not subject to formal or informal consultation. It is the responsibility of the action agencies to determine which actions "May Affect" threatened or endangered species and to initiate consultation with the USFWS. Since the Biological Evaluations have determined that there is a “no effect” determination for all listed wildlife species therefore no formal consultation will take place (see Appendix B). A verbal agreement has been given to he Forest Service and a Biological Opinion Bull trout is being written by the consulting agencies while the EA is distributed for a 30 day review.